

BC337, BC337-16, BC337-25, BC337-40, BC338-25

Amplifier Transistors

NPN Silicon

Features

- Pb-Free Package is Available*

MAXIMUM RATINGS

Rating	Symbol	BC337	BC338	Unit
Collector-Emitter Voltage	V_{CEO}	45	25	Vdc
Collector-Base Voltage	V_{CBO}	50	30	Vdc
Emitter-Base Voltage	V_{EBO}	5.0		Vdc
Collector Current - Continuous	I_C	800		mAdc
Total Device Dissipation @ $T_A = 25^\circ\text{C}$ Derate above 25°C	P_D	625	5.0	mW mW/ $^\circ\text{C}$
Total Device Dissipation @ $T_C = 25^\circ\text{C}$ Derate above 25°C	P_D	1.5	12	W mW/ $^\circ\text{C}$
Operating and Storage Junction Temperature Range	T_J, T_{stg}	-55 to +150		$^\circ\text{C}$

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	200	$^\circ\text{C}/\text{W}$
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	83.3	$^\circ\text{C}/\text{W}$

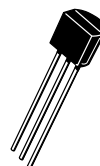
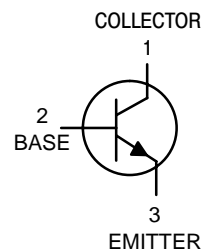
Maximum ratings are those values beyond which device damage can occur. Maximum ratings applied to the device are individual stress limit values (not normal operating conditions) and are not valid simultaneously. If these limits are exceeded, device functional operation is not implied, damage may occur and reliability may be affected.

*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.



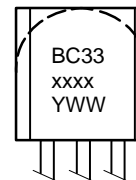
ON Semiconductor®

<http://onsemi.com>



TO-92 (TO-226)
CASE 29

MARKING DIAGRAM



xxxx = Specific Device Code
Y = Year
WW = Work Week

ORDERING INFORMATION

See detailed ordering and shipping information in the package dimensions section on page 4 of this data sheet.

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ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS					
Collector-Emitter Breakdown Voltage (I _C = 10 mA, I _B = 0) BC338	V _{(BR)CE} O	45 25	- -	- -	Vdc
Collector-Emitter Breakdown Voltage (I _C = 100 μA, I _E = 0) BC338	V _{(BR)CE} S	50 30	- -	- -	Vdc
Emitter-Base Breakdown Voltage (I _E = 10 μA, I _C = 0)	V _{(BR)EB} O	5.0	-	-	Vdc
Collector Cutoff Current (V _{CB} = 30 V, I _E = 0) (V _{CB} = 20 V, I _E = 0)	I _{CBO}	- -	- -	100 100	nAdc
Collector Cutoff Current (V _{CE} = 45 V, V _{BE} = 0) (V _{CE} = 25 V, V _{BE} = 0)	I _{CES}	- -	- -	100 100	nAdc
Emitter Cutoff Current (V _{EB} = 4.0 V, I _C = 0)	I _{EBO}	-	-	100	nAdc

ON CHARACTERISTICS

DC Current Gain (I _C = 100 mA, V _{CE} = 1.0 V)	h _{FE}	100	-	630	-
		100	-	250	
		160	-	400	
(I _C = 300 mA, V _{CE} = 1.0 V)		250	-	630	
		60	-	-	
Base-Emitter On Voltage (I _C = 300 mA, V _{CE} = 1.0 V)	V _{BE(on)}	-	-	1.2	Vdc
Collector-Emitter Saturation Voltage (I _C = 500 mA, I _B = 50 mA)	V _{CE(sat)}	-	-	0.7	Vdc

SMALL-SIGNAL CHARACTERISTICS

Output Capacitance (V _{CB} = 10 V, I _E = 0, f = 1.0 MHz)	C _{ob}	-	15	-	pF
Current-Gain-Bandwidth Product (I _C = 10 mA, V _{CE} = 5.0 V, f = 100 MHz)	f _T	-	210	-	MHz

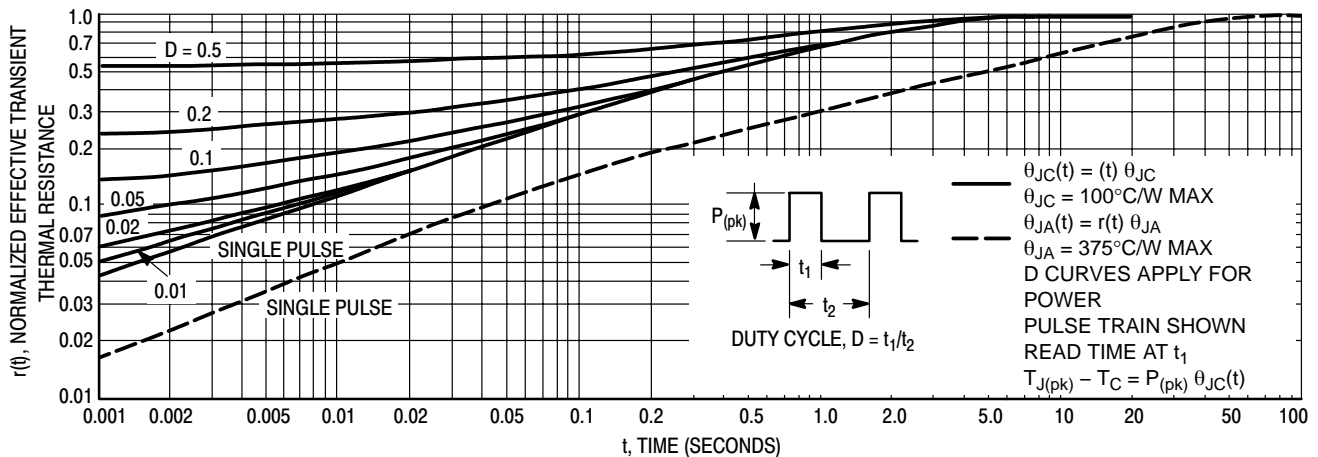


Figure 1. Thermal Response

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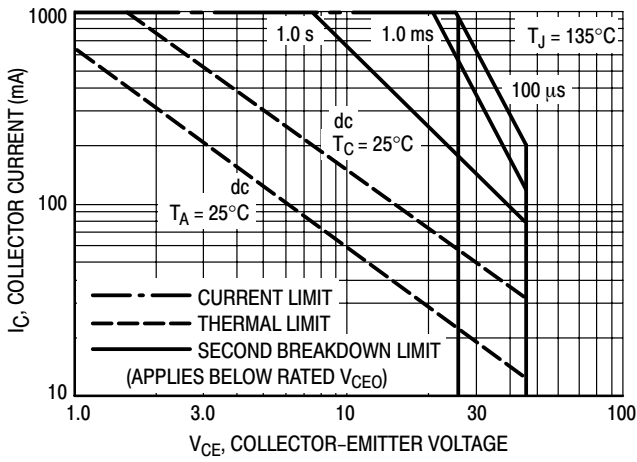


Figure 2. Active Region – Safe Operating Area

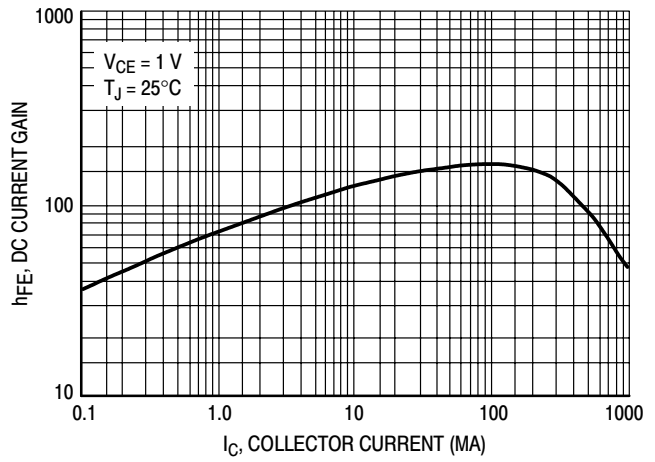


Figure 3. DC Current Gain

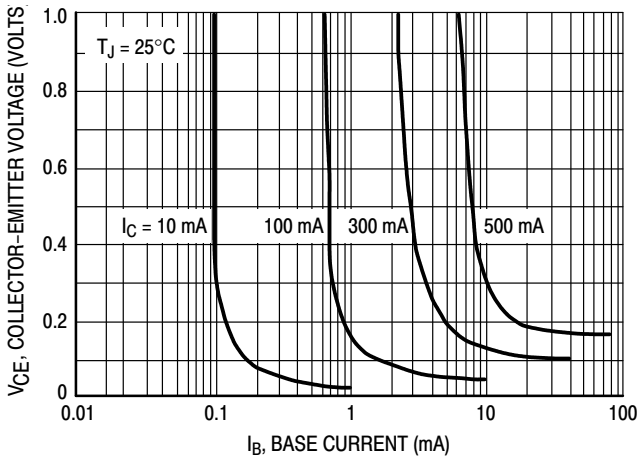


Figure 4. Saturation Region

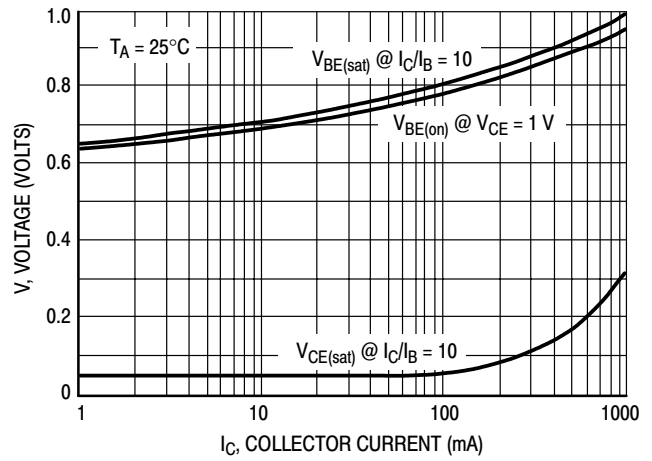


Figure 5. "On" Voltages

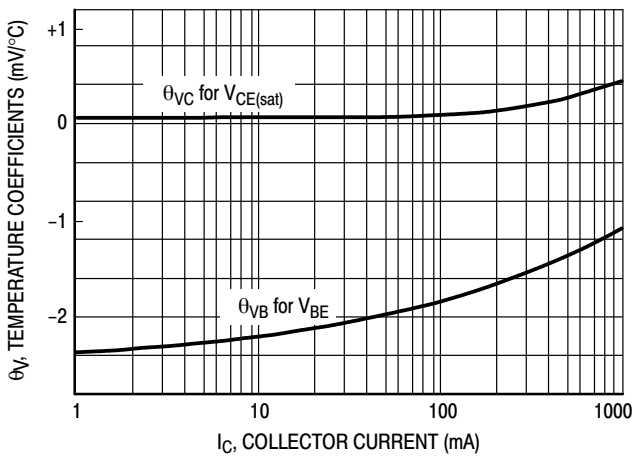


Figure 6. Temperature Coefficients

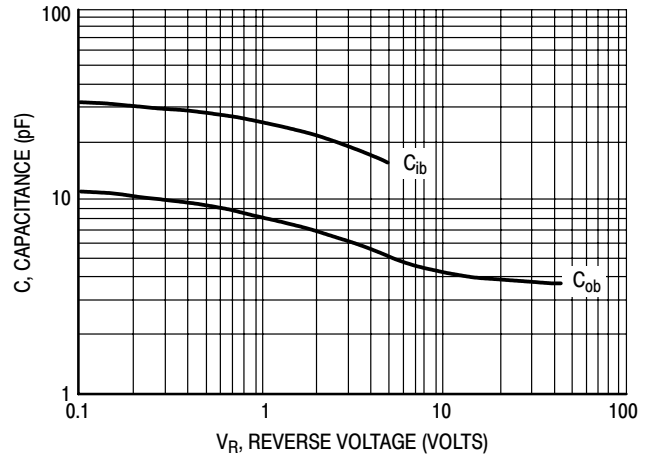


Figure 7. Capacitances

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ORDERING INFORMATION

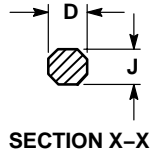
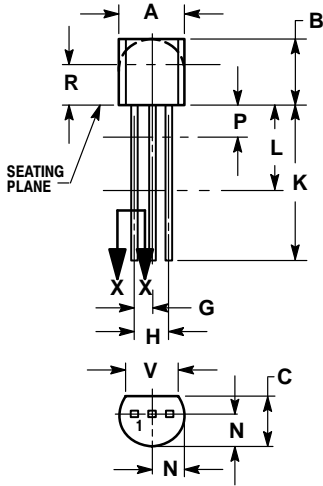
Device	Package	Marking	Shipping [†]
BC337	TO-92	7	5000 Units / Bulk
BC337RL1	TO-92	7	2000 / Tape & Reel
BC337ZL1	TO-92	7	2000 / Tape & Ammunition
BC337-16	TO-92	7-16	5000 Units / Bulk
BC337-16RL1	TO-92	7-16	2000 / Tape & Reel
BC337-16ZL1	TO-92	7-16	2000 / Tape & Ammunition
BC337-25	TO-92	7-25	5000 Units / Bulk
BC337-25RL1	TO-92	7-25	2000 / Tape & Reel
BC337-25ZL1	TO-92	7-25	2000 / Tape & Ammunition
BC337-25ZL1G	TO-92 (Pb-Free)	8-25	2000 / Tape & Ammunition
BC337-40	TO-92	7-40	5000 Units / Bulk
BC337-40RL1	TO-92	7-40	2000 / Tape & Reel
BC337-40ZL1	TO-92	7-40	2000 / Tape & Ammunition
BC338-25ZL1	TO-92	8-25	2000 / Tape & Ammunition

[†]For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

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PACKAGE DIMENSIONS

TO-92 (TO-226)
CASE 29-11
ISSUE AL



NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. CONTOUR OF PACKAGE BEYOND DIMENSION R IS UNCONTROLLED.
4. LEAD DIMENSION IS UNCONTROLLED IN P AND BEYOND DIMENSION K MINIMUM.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.175	0.205	4.45	5.20
B	0.170	0.210	4.32	5.33
C	0.125	0.165	3.18	4.19
D	0.016	0.021	0.407	0.533
G	0.045	0.055	1.15	1.39
H	0.095	0.105	2.42	2.66
J	0.015	0.020	0.39	0.50
K	0.500	---	12.70	---
L	0.250	---	6.35	---
N	0.080	0.105	2.04	2.66
P	---	0.100	---	2.54
R	0.115	---	2.93	---
V	0.135	---	3.43	---

STYLE 17:

- PIN 1. COLLECTOR
2. BASE
3. EMITTER

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